

## CLAIMS

What is claimed is:

- 1 1. A method of determining at least one haplotype of a genetic locus comprising:
  - 2 (a) amplifying genomic DNA, wherein the amplified genomic DNA
  - 3 comprises a non-coding region sequence that is in genetic linkage with the
  - 4 genetic locus;
  - 5 (b) detecting one or more sequence variations in the non-coding region; and
  - 6 (c) determining at least one haplotype of the genetic locus.
- 1 2. The method of claim 1, wherein a single haplotype is determined.
- 1 3. The method of claim 1, wherein two or more haplotypes are determined.
- 1 4. The method of claim 1, wherein the genetic locus is an HLA locus.
- 1 5. The method of claim 1, wherein the at least one haplotype is associated with a  
2 genetic disease.
- 1 6. The method of claim 5, wherein the disease is cystic fibrosis.
- 1 7. The method of claim 5, wherein the disease is phenylketonuria, muscular  
2 dystrophy or beta-thalassemia.
- 1 8. The method of claim 1, further comprising forensic testing.
- 1 9. The method of claim 8, further comprising:
  - 2 (a) analyzing DNA from a crime scene sample;

- 3 (b) analyzing DNA from a sample of a suspected perpetrator of the crime; and  
4 (c) comparing the haplotypes present in the crime scene sample and the  
5 suspected perpetrator sample.

1 10. The method of claim 1, further comprising paternity testing.

1 11. The method of claim 10, further comprising:

- 2 (a) analyzing DNA from an off-spring;  
3 (b) analyzing DNA from at least one suspected parent; and  
4 (c) comparing the haplotypes present in the offspring's DNA and in the  
5 suspected parent's DNA.

1 12. The method of claim 1, wherein the amplified genomic DNA further comprises at  
2 least part of at least one exon.

1 13. A method for determination of at least one haplotype of a multi-allelic genetic  
2 locus comprising:

- 3 (a) amplifying genomic DNA with a primer pair that spans a non-coding  
4 region sequence, said primer pair defining a DNA sequence which is in  
5 genetic linkage with said genetic locus and contains a sufficient number of  
6 non-coding region sequence nucleotides to produce an amplified DNA  
7 sequence characteristic of said at least one haplotype;  
8 (b) analyzing the amplified DNA sequence; and  
9 (c) determining at least one haplotype.

1 14. The method of claim 13, wherein a single haplotype is determined.

- 1 15. The method of claim 13, wherein two or more haplotypes are determined.
- 1 16. The method of claim 13, wherein the genetic locus is an HLA locus.
- 1 17. The method of claim 13, wherein the at least one haplotype is associated with a  
2 genetic disease.
- 1 18. The method of claim 17, wherein the genetic disease is associated with variations  
2 in a regulatory or other untranslated region of the genetic locus.
- 1 19. A method for determination of at least one haplotype of an HLA locus  
2 comprising:  
3 (a) amplifying genomic DNA with a primer pair that spans a non-coding  
4 region sequence, said primer pair defining a DNA sequence which is in  
5 genetic linkage with said genetic locus and contains a sufficient number of  
6 non-coding region sequence nucleotides to produce an amplified DNA  
7 sequence characteristic of said at least one haplotype;  
8 (b) analyzing the amplified DNA sequence; and  
9 (c) determining at least one haplotype.
- 1 20. The method of claim 19, wherein a single haplotype is determined.
- 1 21. The method of claim 19, wherein two or more haplotypes are determined.
- 1 22. The method of claim 19, further comprising forensic testing.
- 1 23. The method of claim 22, further comprising:  
2 (a) analyzing DNA from a crime scene sample;

- 3 (b) analyzing DNA from a sample of a suspected perpetrator of the crime; and  
4 (c) comparing the haplotypes present in the crime scene sample and the  
5 suspected perpetrator sample.

1 24. The method of claim 19, further comprising paternity testing.

1 25. The method of claim 24, further comprising:

- 2 (i) analyzing DNA from an off-spring;  
3 (ii) analyzing DNA from at least one suspected parent; and  
4 (iii) comparing the haplotypes present in the offspring's DNA and in the  
5 suspected parent's DNA.

For "B" cases